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Progress in the Control of Prostate Cancer, Rhode Island, 1987-1998

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Prostate cancer is one of the leading cancers among men in the United States. Annually, it accounts for about 185,000 new cases of cancer, and about 39,000 deaths.[1] New cases and deaths are uncommon in men under 40. Over 40, however, age-specific incidence and mortality rates rise rapidly, peaking in the oldest age groups.[2] Prostate tumors that develop early in life tend to be considerably more aggressive than those that develop later in life. Prostate malignancies of all behaviors are so common among very old men in the United States that the prevalence of prostate cancer at death (from all causes) has been estimated grossly at 25-50%.

The trend in prostate cancer incidence in the United States underwent a dramatic change in 1986, with the introduction of the prostate-specific antigen (PSA) test.[1] PSA made it possible to detect tumors before they became palpable or otherwise symptomatic. Like other screening innovations which allow us to detect disease earlier, use of the PSA test caused a temporary but dramatic increase in prostate cancer incidence in the United States. Rates peaked in 1992, six years after PSA's first use, and have been declining since. Rates are expected to return to the baseline trend observed prior to1986: average annual increases of about 3% in the age-adjusted prostate cancer incidence rate for men of all races.[3]

The introduction of the PSA test in the United States also led to an improvement in the stage distribution of prostate tumors at the time of diagnosis. Broadly speaking, the proportion of localized disease has increased, while the proportion of more advanced disease has decreased. The interpretation of this trend has been complicated, however, by changes in treatment which have affected the ways in which prostate tumors are staged.[1]

The stage shift in diagnosed prostate cancer has been accompanied by an increase in the proportion of moderately differentiated tumors. In short, although tumors are being found earlier than previously, they are not more likely to be well differentiated.[1]

The trend in prostate cancer mortality in the United States has also changed since the introduction of the PSA test, from small annual increases in the prostate-specific age-adjusted mortality rate to small annual decreases.[2] Although it is believed that use of the PSA test may have contributed to this decline, it is too early to draw conclusions, given the plausibility of competing explanations. For example, improvements in the treatment of prostate cancer or in access to state-of-the-art treatment for prostate cancer may have caused prostate-specific mortality to decline in the United States.

In the United States blacks are more likely than whites to develop prostate cancer and to die of the disease.[2] Differentials in prostate-specific age-adjusted incidence and mortality rates are substantial, with the latter exceeding the former. Blacks as well as whites have benefited from the PSA test, although the use of PSA was introduced more slowly among blacks than whites, as evidenced by race-specific trends in prostate-specific age-adjusted incidence rates.[3] In the United States as a whole, black rates peaked a year after white rates, although this phenomenon varied by geographic region.[3] Black mortality rates from prostate cancer appear to be declining of late, but a little more slowly than white mortality rates.[2] The latter is consistent with incidence trends and the reputed connection between use of the PSA test and prostate cancer mortality.

Focus on Rhode Island

About 775 Rhode Island men are diagnosed with prostate cancer each year. Of these, most are white, about 20 are black, and 1 or 2 are men of other races. In 1998 the mean (and median) age of these men was 71. About 150 Rhode Island men die from prostate cancer each year. Again, most are white. About six are black. In 1998 the mean (and median) age of these men was 79.

In Rhode Island, as elsewhere in the United States, prostate cancer age-adjusted incidence and mortality rates are higher for blacks than whites. The black/white rate ratios are observable across all age groups and are higher for mortality rates than incidence rates. For example, in 1995-1998, the black/white rate ratio was 1.9 for age-adjusted mortality and 1.2 for age-adjusted incidence.

Between 1987 and 1998, prostate cancer age-adjusted incidence rates rose dramatically for whites and blacks. For whites, virtually all of the change came early. White incidence rates for 1991-1994 and for 1995-1998 were almost

Prostate cancer statistics for Rhode Island, 1987-1998 and the United States, 1993-1997

Sources: RI - RI Cancer Registry, RI Department of Health; US - SEER Cancer Statistics Review, 1973-1997 (2)

RI - Prostate cancer cases newly diagnosed

Year	All races	White	Black	Other
1987	412	399	12	1
1988	403	389	14	0
1989	404	396	7	1
1990	539	531	8	0
1991	747	732	15	0
1992	810	798	10	2
1993	876	854	21	1
1994	777	757	19	1
1995	762	751	11	0
1996	780	755	24	1
1997	822	798	24	0
1998	740	712	26	2

RI - Prostate cancer deaths

Year	All races	White	Black	Other
1987	134	126	8	0
1988	124	121	3	0
1989	153	145	7	1
1990	124	118	6	0
1991	146	139	6	1
1992	134	130	2	2
1993	134	129	5	0
1994	156	146	9	1
1995	151	147	4	0
1996	139	134	4	1
1997	147	142	5	0
1998	148	141	7	0

RI - Prostate cancer age-adjusted (a) incidence

Year	White	Black
87-90	80.4	115.1
91-94	143.5	149.9
95-98	144.8	168.7

RI - Prostate cancer age-adjusted (a) mortality

Year	White	Black
87-90	24.1	66.1
91-94	23.8	58.5
95-98	22.9	42.5

(a) Age adjusted using the "1970 US Standard Population," the convention for cancer statistics in the United States

RI - Prostate cancer age-specific incidence

Age	White	Black
30-39	0.6	0.0
40-49	9.4	23.7
50-59	130.4	200.8
60-69	538.0	578.5
70-79	1026.4	1163.1
80+	1003.3	1271.6

RI - Prostate cancer age-specific mortality

Age	White	Black
30-39	0.1	0.0
40-49	0.8	0.0
50-59	7.2	21.2
60-69	51.2	132.1
70-79	184.4	484.8
80+	559.1	1093.3

RI - percent of prostate cancer cases by stage of disease at diagnosis

	White 1987-1990	White 1995-1998	Black 1987-1990	Black 1995-1998
In situ	0	0	0	0
Localized	55	58	51	65
Regional	9	8	10	7
Distant	18	5	27	11
Unstaged	18	29	12	18
Total	100	100	100	100

Prostate cancer age-adjusted (b) incidence >1993-1997

	RI	US
All races	146.5	147.0
White	147.5	141.1
Black	165.0	238.9

Prostate cancer age-adjusted (b) mortality >1993-1997

	RI	US
All races	23.6	24.7
White	23.2	22.6
Black	50.3	53.6

(b) Age adjusted using the "1970 US Standard Population," the convention for cancer statistics in the United States

identical. For blacks, the change was more gradual. Black incidence rates continued to climb between 1991-1994 and 1995-1998, and may not have peaked.

In Rhode Island, prostate cancer age-adjusted mortality rates declined for whites and blacks throughout the 1987-1998 period. The decline was steeper for blacks (36%) than whites (5%), causing the black/white prostate cancer mortality ratio to decline from 2.7 in 1987-1990 to 1.9 in 1995-1998.

From 1987-1990 to 1995-1998, the stage distribution of newly diagnosed prostate cancers improved. The proportion of distant tumors declined, and the proportion of local tumors increased. This improvement was experienced by blacks as well as whites. In 1987-1990, 51% of newly diagnosed prostate cancers among black men were localized. By 1995-1998, this percentage had increased to 65.

In recent years, the age-adjusted prostate cancer incidence rate for men of all races has been similar in Rhode Island and the United States as a whole, while the age-adjusted prostate cancer mortality rate for men of all races has been slightly lower in Rhode Island than in the United States as a whole. The differentials change when race is controlled. Among white men, prostate cancer age-adjusted incidence and mortality are both higher in Rhode Island than in the United States as a whole, while among black men, the reverse is true.

The interpretation of Rhode Island / United States differentials is complicated by the dynamics of screening with the PSA test, because no one has measured the extent of PSA use in either area. Thus, lower incidence in one area may mean lower incidence, or it may mean lesser use of the PSA test. For example, we may well ask, "Is prostate cancer incidence among black men lower in Rhode Island than in the United States as a whole because black men in Rhode Island have lesser access to the PSA test?" Frankly, the size of this differential is large enough to raise concern about access to care for black men in Rhode Island.

In sum, Rhode Island has experienced prostate cancer rate dynamics similar to the rest of the country in recent years. Following the introduction of the PSA test in 1986, Rhode Island experienced a dramatic increase in incidence, and a small decline in mortality. Race differentials were affected, as were stage distributions of newly diagnosed prostate cancers. Progress has been made on all fronts, but nagging doubts remain about differential access to care. Given current rates and their recent dynamics, it would be prudent to focus additional resources on the screening and treatment of black men, the group at greatest risk of disease and death.

References

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